decompose this ore, he had recourse to a process to which he was led by some instances he had before observed, in which a mixture of two compounds of the same ingredients, but in different proportions, remained insoluble, while a third substance seemed to operate upon at least one of these two compounds, and to produce the decomposition that was aimed at. The following is the manner in which he explains this operation:—When a metallic oxide A, for instance, containing 25 per cent. of oxygen, is in contact with the metallic oxide B, containing 10 per cent., they will each remain quiescent in their respective states: but if a solvent C, for which the substance B has no affinity at 10 per cent. of oxygen, but a powerful one at 15 or 20 per cent., comes to be added, then may the oxide A lend a part of its oxygen to B, in order to enable it to combine with the solvent C. Thus when phosphoric acid had dissolved all it could of the pulverized ore, its oxygen in the part undissolved was concentrated, as it were, to the amount of about 20 per cent.; and all that which could not be dissolved, would, through a twofold affinity of copper for oxygen to the amount of 20 per cent., and of phosphoric acid for the oxide of copper of that degree of oxidation, yield up its entire share of oxygen, to favour the combinations which took place in the new order, the only one which could exist among the substances now present.

From the variety of experiments founded upon this reasoning, it has been gathered, that the copper in this ore contains much less oxygen than has ever been suspected in any oxide of copper; and that, from the quantity of the copper which was precipitated in the metallic state by iron, it appears to be combined in the proportion of only $11\frac{1}{2}$ per cent., the rest being pure copper,—a state of metallic concentration of which no instance has as yet been observed in nature.

It is lastly suggested, that, considering not only the great purity of this ore, but also the singular facility with which this useful metal may be extracted from it, it will be found much superior to every copper ore hitherto discovered. It contains no iron and no sulphur; the absence of which latter is a peculiar advantage. It is hence strongly recommended to the proprietors of mines to be particularly attentive to this ore, which is said not to be uncommon in some parts of Cornwall, whereby they are likely not only to further their private advantage, but may also materially contribute to promote the public utility.

A Historical and Anatomical Description of a doubtful amphibious Animal of Germany, called, by Laurenti, *Proteus Anguinus. By* Charles Schreibers, *M.D. of Vienna. Communicated by the Right Hon. Sir* Joseph Banks, *Bart. K.B. P.R.S.* Read March 26, 1801. [*Phil. Trans.* 1801, *p.* 241.]

This singular production has hitherto been found only in a small lake in Carniola, called Sitticher See, and has never yet been met

with in other large lakes of the neighbourhood, although these be known to communicate with the former by subterraneous channels. The specimens which have as yet reached either the public or private collections are so few, that all the descriptions hitherto given by Laurenti, Scopoli, Herman, Schneider, and Gmelin, have been found equally defective and erroneous, especially as to the anatomical construction, which, indeed, those able naturalists have scarcely had opportunities of investigating. This defect probably gave rise to a difference of opinion concerning the class to which this animal is to be annumerated; some considering it as a species arrived at its degree of perfection, while others maintain that it is the larva of some kind of lizard hitherto unknown.

The principal object of this paper is to offer so circumstantial a description of the different parts of this animal as to enable physiologists to determine the point hitherto undecided. The specimen from which this description was taken measured about thirteen inches in length, and one inch in diameter; the fore part of the head was flat and narrow, somewhat resembling the bill of a duck: the upper lip projected considerably beyond the lower one. No external traces of nostrils, ears or eyes could be discovered. Of the latter, however, some indications are thought to have been perceived on a living specimen. On each side of the occiput was an opening, like those of fishes; and over them certain branchial appendages, similar to those in tadpoles and other larvæ of amphibious animals; whence probably arose the difference of opinions concerning the nature of this animal. From the description here given, we are to infer, that the construction of these parts, when carefully examined, differs materially from those as well of fishes as of tadpoles or other larvæ.

The body is round, equally thick throughout between the fore and hind feet: the fore feet are about one inch long, each having three toes without nails, the hind feet about two lines shorter with only two toes: behind the latter the body grows narrower, and terminates in the tail, which is compressed on the sides, and ends nearly in a point. The skin is coriaceous; but looking at it with a magnifier, it exhibits a number of minute glands underneath the epidermis, similar to those in water-lizards, &c. Its colour when alive is a light red; but when kept a while in spirits, it becomes of a dusky brown.—A detailed account is also given of the muscular fibres under the skin.

Upon opening the body by a longitudinal section, the whole cavity was found almost filled by the liver, extending from the thorax down to the pelvis, so as to cover the greatest part of the other viscera. The heart consists of a single ventricle, and an auricle as large as the ventricle. The situations, dimensions, and structure of these, as well as of the stomach, intestines, gall-bladder, spleen, kidneys, pancreas, &c., are minutely described: and as it was found to have something particular in its formation, the author dwells somewhat more at large on the air-bladder, or pneumatic apparatus, which he met with in the thorax, immediately below the heart. This he found to be a simple bag, without any cellular structure, as in the

respiratory organs or lungs of other amphibious animals; but a similar viscus he has hitherto sought for in vain in the larvæ of water lizards or other animals of that description.

Concerning the habits of this singular animal, we learn from a friend of the author, who resides near the lake where it is found, and who had the good fortune to keep one of them alive during several days, that it seemed at all times very torpid; that though it would occasionally swim with the help of its broad tail, it was in general motionless at the bottom of the water. Sometimes it rose to the surface, stretched its head out of the water, seemed to take in air, but immediately returned to the bottom. It crept by means of its feet both at the bottom and on the side of the vessel, but so slowly that the circumstance may be thought characteristic of the animal. Sometimes, putting its head out of the water, it produced a hissing noise, louder than could have been expected from so small an animal.

The author, lastly, compares this singular production with the *Siren lacertina* of Linnæus, which has since been classed with the fishes under the name of *Muræna Siren*, and finds a considerable analogy between the two: and though he seems unwilling to determine whether the animal he describes be perfect, or only a larva of some unknown species, the facts he has adduced will probably be thought to favour the former of these opinions.

Observations tending to investigate the Nature of the Sun, in order to find the Causes or Symptoms of its variable Emission of Light and Heat; with Remarks on the Use that may possibly be drawn from Solar Observations. *By* William Herschel, *LL.D. F.R.S.* Read April 16, 1801. [*Phil. Trans.* 1801, *p.* 265.]

The principal object of this paper is to explore the causes or symptoms of the variation we observe in the emission of light and heat from the sun.

Considering the great influence of these agents on most of the concerns of life, it is scarcely necessary to point out the importance of the inquiry: not that any discoveries we may make on the subject will ever enable us to modify their operations, but that, by a due knowledge of them, we may be guided in our own proceedings, in the same manner as we frequently are by the meteorological instruments, on whose combined indications we have been taught to place a certain degree of confidence.

In order to obtain as intimate a knowledge of the sun as that which is required for the purpose here indicated, it is obvious that the first step must be to become well acquainted with all the phænomena that usually appear on its surface: and this accordingly is the subject of the first part of the present paper. Dr. Herschel premises his reasons for substituting a new set of names for those of spots, nuclei, penumbræ, faculæ, and luculi, hitherto used to denote certain appearances on the sun. Those he adopts are, openings, flats, ridges, nodules, crankles, shallows, dimples, and punctures.